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INTRODUCTION



What Is “Intelligence?”

“ A child is a candle to be lit,
not a cup to be filled. ” Beverly Galyean

Most educators have become aware of the woeful inadequacy of traditional IQ testing. We know that intelligence is expressed in a variety of ways that cannot be reduced to a single number, based solely on verbal and mathematical skills. We also know that intelligence can be cultivated and expanded.

Who is smartest: William Shakespeare, Albert Einstein, Pablo Picasso, Michael Jordan, Leonard Bernstein, Emily Dickinson or Martin Luther King? If we make this judgment based on the traditional definition of intelligence, which heavily favors verbal-linguistic and logical-mathematical areas, we would probably lean toward Shakespeare and Einstein as the most “intelligent” of this group.

However, intuitively we know that all these people have high degrees of intelligence in their own special fields. They embody the unique and invaluable intelligences that exemplify the linguist, scientist, artist, athlete, musician, self-reflective individual, or leader of others. Clearly, each member of this group of seven evidences maximal use of mental capacities that each expresses in his or her unique way.

Consider this definition of intelligence. It is the ability:

- to solve real life problems;
- to posit new problems to solve (which lays the groundwork for acquiring new knowledge); and
- to make something or offer a service that is valued within one’s culture.

This definition is exemplified by each member of our highly intelligent group of seven. It is a definition from Howard Gardner, a psychologist involved in Harvard’s Project Zero. He studied the cognitive development of normal, gifted, and brain-damaged children for years. In 1983 he published a book called *Frames of Mind*, in which he presented an extensively researched and documented cross-cultural theory of multiple intelligences.

Gardner identified eight rigorous criteria for the existence of an intelligence. They are grounded in neuroanatomy, developmental psychology, cognitive psychology, and anthropology. Here are four of the criteria:

- Each intelligence has a definite developmental pattern.
- Each is biologically based in the physiology of the brain.
- Each is sparked by certain kinds of stimuli inherent to the particular intelligence.
- There must be some way to depict ideas and experiences in a symbolic way that can be universally understood (e.g., words, musical notation, formulas).

Based on these and other criteria, Gardner has identified seven intelligences. Two of these are *language-related*: verbal-linguistic and musical-rhythmic. Two are *person-related*: intrapersonal and interpersonal. And three are *object-related*, which means that they are activated by objects that individuals encounter in their environment. These are the logical-mathematical, visual-spatial, and bodily-kinesthetic intelligences.

Gardner contends that every normal individual is born with all seven intelligences; that each of us is a unique blend of all seven; and that under normal conditions we can all strengthen any of the intelligences, given proper stimuli and effort. The challenge of today's educator is to design lessons that meaningfully incorporate all seven intelligences, so that we maximize the possibility of each of our students learning in the ways that match his or her particular strengths of intelligence. Also we must devise ways to evaluate progress using techniques that allow student learning to be adequately assessed.

As Rita Dunn has said: "If a child is not learning the way you are teaching, then you must teach in the way the child learns." The intent of this lesson plan book is to help you to do just that - easily. You may well discover that you have already been engaging many of the intelligences. Using this lesson planning approach will help you to clarify which of the intelligences you incorporate with regularity into your lesson planning and which you may tend to overlook.

The Brain and Multiple Intelligences

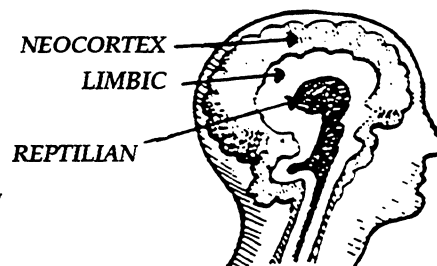
"Our brain is like a mansion. The problem is that we only live in the lobby." Marion Diamond

One of Gardner's criteria for qualifying an intelligence is that it is biologically based in the physiology of the brain. Because of this central role of the brain, it is important to explain a few basic concepts about the brain that have particular relevance to teaching and lesson planning. The most helpful explanation has to do with the work of Dr. Paul MacLean.

For many years, Dr. MacLean was the director of the Laboratory of Brain Evolution and Behavior for the National Institute of Mental Health. His research led to what he calls the "triune brain" theory, which postulates that we actually have three parts to the human brain: the reptilian brain, the limbic brain, and the neocortex.

REPTILIAN BRAIN

When information comes in from our sensory system, it goes first to the oldest part of the brain, which Dr. MacLean calls the *reptilian* brain. This part of the brain governs basic physiological survival needs. The bodily-kinesthetic intelligence is partially located in the cerebellum, which is part of the reptilian brain.



LIMBIC BRAIN

Assuming that the learner's basic needs are being met in the classroom setting and that he/she feels safe there, the next part of the brain to which information passes is a section called the *limbic* brain. This is the headquarters of our emotions. The limbic brain evaluates all experiences on the basis of pain or pleasure and stimulates brain chemicals accordingly.

If the limbic brain determines an experience to be painful or boring, it secretes chemicals that shut the brain down, and no further learning can take place. If it determines that the experience is pleasant, fun, stimulating, exciting, or interesting, it secretes different chemicals that allow the information to pass through to the third part of the brain, the neocortex, which is where all higher-order thinking skills are located.

Two behaviors unique to the limbic brain are the abilities to give and receive nurturing and to play. The limbic brain both seeks and thrives on experiencing an harmonious situation. The intrapersonal and interpersonal intelligences, which have to do with creating a sense of internal and external harmony, are partially located in the limbic brain. This is the biological justification for the emphasis on self-esteem and cooperative learning and for including affective and interactive objectives in a lesson plan. The environment that these create make it possible to achieve much more in the cognitive realm.

NEOCORTEX

The third part of the brain, the part that marks us as uniquely human, is the neocortex, what we tend to think of as "gray matter." The neocortex allows us to have hindsight, foresight, and insight. It houses the receptor sites for vision, hearing, speech, language, logic, spatial sense, imagination, music, long-term memory, and gross and fine motor skills.

All of the seven intelligences have a physiological location somewhere in the neocortex. The more we engage all seven in teaching a lesson, and the more "hooks and eyes" we give our students to have the neocortex activated, the more they will learn and retain.

How this Lesson Plan Book Will Help You Incorporate Multiple Intelligences into Your Teaching

SYNOPSIS OF EACH INTELLIGENCE

First of all, you will find a brief synopsis of each intelligence that presents in a nutshell the core elements of that intelligence. This synopsis includes examples of *teaching* activities that incorporate that intelligence and *assessment* activities that utilize the intelligence. The assessment activities are suggestions for using that particular intelligence to ascertain what your students have learned in a particular lesson or unit. Even if you do not have the time to read other references from the bibliography, this synopsis will be sufficient to get you started in incorporating each intelligence.